CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

ORDER 96-024

FINAL SITE CLEANUP REQUIREMENTS FOR:

FMC CORPORATION AND UNITED DEFENSE LP, GROUND SYSTEMS DIVISION for the property located at

328 WEST BROKAW ROAD
SANTA CLARA
SANTA CLARA COUNTY
CALIFORNIA

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

1. **Site Location:** The Site is an approximately 27.1 acre industrial site located at 328 West Brokaw Road, Santa Clara, Santa Clara County, California (hereinafter referred to as the Site) as shown in attached Figure 1. The Site is bounded by the Southern Pacific Transportation Company railroad maintenance yard to the south, West Brokaw Road to the west, Coleman Avenue to the North, and the city boundaries of Santa Clara and San Jose to the east.

2. **Site History:** Land use in the area was primarily agricultural before its purchase by FMC Corporation (FMC) in 1953. FMC constructed manufacturing facilities on the Site in 1963 and since that time has used the Site for manufacturing military tracked vehicles, including assembly and painting operations (Figure 2).

3. **Named Discharger:** FMC Corporation and United Defense LP, Ground Systems Division, are hereinafter jointly and individually referred to as the "discharger." The Site is owned by FMC Corporation but environmental issues are managed by United Defense LP, Ground Systems Division (United Defense). United Defense is a limited partnership between FMC and HARSCO Corporations, which was formed on January 1, 1994. From that date, United Defense became responsible for environmental regulatory matters involving the Site.

4. **Regulatory Status:** The Board has adopted the following orders for this Site:

   - Site Cleanup Requirements Order No. 91-164 adopted November 21, 1991, naming FMC as a discharger;

   - NPDES Permit No. CA0029963 imposed by Waste Discharge Requirements Order No. 93-145 adopted November 19, 1993, for discharge of treated groundwater into a storm sewer. This Order is superseded by the General NPDES Permit No. CAG912003 imposed by Waste Discharge Requirements Order No. 94-087 adopted August 22, 1995.

5. **Hydrogeology:** Sediments underlying the Site include basinal or marine clays, coarse-grained channel and associated medium-grained levee deposits, and inter-channel silts and clays. The first unit encountered at the Site consists of clay-rich soils, up to 20 feet thick. A 5- to 35-foot thick laterally-discontinuous unit consisting of sandy silts, silty sands, and gravelly sands (the A-level aquifer) underlies the surficial clay. The A-level aquifer is bisected by a clay lens in portions of the Site, locally creating an A1- and A2-zone aquifer relationship.

   A second water-bearing unit (the B-level aquifer) is present at depths of approximately 50 to 90 feet below ground surface, and consists of a laterally-continuous, 20- to 35-foot thick gradational sequence of sandy silts, silty sands, and gravelly sands. Separating the A- and B-level aquifers is a laterally-continuous greenish-gray to bluish-gray silty clay unit encountered at depths ranging from 40 to 78 feet below ground surface. This aquitard is 5 to 13 feet thick and provides confinement for the B-level aquifer.

   Natural groundwater flow is towards the north in both the A- and B-level aquifers. Groundwater levels in the A- and B-level aquifers have risen almost continuously since monitoring began in 1989. Aquifers that serve as drinking water supplies exist regionally at depths of 300 to 900 feet below ground surface.

6. **Remedial Investigations:** Subsurface soil and groundwater investigations were performed from 1989 through 1993. FMC Corporation submitted a Remedial Investigation Report in May 1993, in accordance with SCR Order 91-164 Provision C.1.d.. A total of 215 soil borings and 31 monitoring wells were installed on and near the Site. Soil and groundwater samples were analyzed for various chemical types, including volatile organic and aromatic compounds, petroleum hydrocarbons and metals. Quarterly and annual groundwater monitoring programs have been conducted at the Site since 1991.

Volatile organic compounds, predominantly trichloroethene (TCE) are the primary chemicals of concern in Site soils. Concentrations of TCE in soil have been detected up to 46 milligrams/kilogram (mg/kg) in one area of the Site. Isolated occurrences of total petroleum hydrocarbons (TPH), consisting primarily of high boiling-point asphalt-related hydrocarbons, have been detected in near-surface soils above 1000 mg/kg. Sporadic TPH detections above 1000 mg/kg were recorded at a maximum depth of 10 feet in only four locations across the Site. Although isolated metals concentrations greater than 10 times their respective soluble threshold limit concentration (STLC) were occasionally detected in near surface soils, site soil metal concentrations are generally within background concentration ranges as explained in the report entitled "Background Metal Concentrations in Groundwater, United Defense, LP, 328 West Brokaw Road Facility, Santa Clara, Santa Clara County, California," dated September 1994.

The A-level aquifer groundwater contains certain VOCs above Maximum Contaminant Levels (MCLs) beneath and immediately downgradient of the Site. The B-level aquifer does not contain VOCs in excess of MCLs. Petroleum-related hydrocarbons (diesel and motor oil) were occasionally detected in the A- and B-level aquifers below 3.2 milligrams/liter (mg/l), while benzene was detected at a maximum concentration of 3.5 micrograms/liter (μg/l). Chromium and silver have been sporadically detected in A-level aquifer monitoring wells at concentrations slightly greater than their respective MCLs. Soluble manganese concentrations have been detected over its secondary MCL. Elevated selenium levels have been recorded in several Site wells, resulting from high background concentrations, typical of Santa Clara Valley. All other metals detected in the A- and B-level aquifers have been at concentrations below MCLs.

7. **Adjacent Sites:** The adjacent and downgradient property located at 333 West Brokaw Road, Santa Clara, Santa Clara County, California is owned by FMC Corporation and environmental regulatory matters are managed by United Defense. In March 1995 the northwestern 12.8 acres of the property (1601 Coleman Avenue) were purchased by Costco Wholesale Corporation. The 333 West Brokaw Road property is currently under SCR Order No. 94-043 which amended previous Order Nos. 91-020, 92-132 and 93-018. Remedial investigations were conducted and the results presented to the Board in 1991. The "Remedial Alternatives Report", "Evaluation of Soil and Groundwater Cleanup Levels", and "Supplemental Evaluation of Alternative Remediation Goals and Remedial Actions" were submitted to the Board in August 1991, June 1992, and April 1993, respectively. Soil remediation commenced in December 1994 and was completed in November 1995. A VOC groundwater plume, referred to as Operable Unit - 2 (OU-2), originating from the 333 West Brokaw Road property was given non-attainment status and is currently managed under a report entitled "Contingency Plan for Groundwater at OU-2," dated August 1994 and approved by Board Staff in November 1994.

The northeast portion of the 333 West Brokaw Road property is underlain by the VOC groundwater plume originating from the 328 West Brokaw Road Site. Five A-level groundwater extraction wells are located along the downgradient property line of the 333 West Brokaw Road property and the leading edge of the plume. Extracted groundwater is conveyed to the 328 West Brokaw Road Site for treatment.

8. **Interim Remedial Measures for Groundwater**: The discharger submitted an Interim Remedial Alternatives Report in June 1992, in accordance with SCR Order 91-164 Provision C.1.c.. This report recommended that interim remedial measures (IRMs) be implemented for the A-level aquifer. The proposed IRMs were approved by Board staff in March 1993. Beginning in April 1993, the discharger implemented the IRMs, including the installation of five off-site and two on-site A-level groundwater extraction wells, an on-site groundwater extraction trench, and an on-site groundwater treatment system (Figure 3). Treated groundwater was discharged under NPDES Permit No. CA0029963 through Order No. 93-145 from December 1994 through July 1995 and under NPDES Permit No. CAG912003 through Order No. 94-087 from August 1995 to present.

   Groundwater extraction from the on-site trench and two on-site extraction wells results in containment of the A-level aquifer. Groundwater extraction from the five off-site extraction wells located along the leading edge of the plume results in containment of the plume on property managed by the discharger, and has initiated cleanup of groundwater impacted by the plume. The groundwater extracted from the trench and extraction wells is conveyed to the treatment system, where the groundwater is treated by air stripping with vapor phase resin absorption. As of September 1995, approximately 354 pounds of VOCs have been recovered since system startup in December 1993.

9. **Feasibility Study:** The discharger submitted the Final Remedial Alternatives Report (RA) in February 1994 in accordance with SCR Order 91-164 Provision C.1.e.. The final remedial action objectives presented in the RA were to: 1) protect human health and the environment; and 2) protect water quality and potential beneficial uses of groundwater by controlling off-site migration of impacted groundwater. Several remedial technologies for treating Site soils and groundwater impacted by VOCs were screened to eliminate those that: 1) would not effectively meet the remedial action objectives, 2) could not be reasonably implemented at the Site, or 3) would be much more costly than other equally effective and implementable technologies.

   As part of the RA preparation, the discharger completed two pilot studies to evaluate *in-situ* cleanup of VOCs in the clay soils underlying the Site. Soil vapor extraction (SVE) of pneumatically fractured soils was chosen as the preferred final remedial alternative for

vadose zone soils.

Continued operation of the IRMs was selected as the preferred final remedial alternative for groundwater because it had been demonstrated that this action prevented further migration of VOCs off-site, and would result in the reduction of the concentration of total VOCs in groundwater.

10. Cleanup Plan:

Total Petroleum Hydrocarbons

The proposed and accepted remedial alternative for TPH in soil was no action. Monitoring for TPH in groundwater will be continued.

Metals

A no-action alternative for soils was proposed in the Remedial Alternatives Report dated February 1994 and was accepted by the Board Staff.

The discharger also submitted a report to the Board entitled "Background Metals Concentrations in Groundwater," dated September 1994, recommending a no action alternative for groundwater at the Site with continued monitoring. The Board Staff reviewed and accepted the subject report.

VOCs

For soil, the discharger proposed and the Board staff accepted Alternative 2 as presented in the RA report. The final remedial alternative for soil outlined in Alternative 2 included SVE of pneumatically fractured vadose zone soils to 10 mg/kg.

For groundwater, the Board staff recommended and the discharger agreed to source area extraction. Groundwater extracted from the source area will be conveyed to the existing air stripping system for treatment. The final remedial action for groundwater is to continue operation of the groundwater extraction and treatment system installed in December 1993, and to perform source area groundwater extraction.

11. RCRA Corrective Action Issues: In June 1992, the State of California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) issued a Resource

Conservation Recovery Act (RCRA) Facility Assessment (RFA) for FMC's San Jose and Santa Clara facilities, including the Site. A "Supplement to RCRA Facility Assessment" was also issued by DTSC to FMC's San Jose and Santa Clara facilities including the Site in December 1994. The RFA and the addendum to RFA identified 17 units at the Site. Of the 17 units, 13 were described as potentially requiring further investigation. The investigation reported under Finding 6 above has included the areas at the Site where these units are located.

Under the terms of a Corrective Action Consent Agreement, effective January 2, 1996, among FMC, United Defense and DTSC, it is acknowledged that investigation, monitoring and corrective action at the Site have been proceeding under Board direction and oversight. In this Agreement, DTSC commits to coordinate with the Board "in order to avoid duplication of efforts and imposition of conflicting standards of work" and undertakes to "facilitate the RWQCB's continuing oversight of such remedial investigation and corrective measures development and implementation at all units at 328 and 333 West Brokaw Road."

12. **Risk Assessment:** A health risk assessment to determine Health-Based Target Levels (HBTLs) for VOCs in soil and groundwater at the Site was included as Section 5 of the RA Report. Since IRMs were implemented to minimize any future impact on off-site groundwater, the discharger proposed final remedial measures based on potential health effects of direct exposure to residual soil concentrations and theoretical use of groundwater from on-site wells at the downgradient property boundary. The risk assessment assumed:

    a. That future land-use conditions at the Site would continue as commercial/industrial. Under this scenario, an HBTL of 10 mg/kg for total VOCs in Site soil would result in a theoretical risk level of less than 1×10^{-6} and a Hazard Index of less than one.

    b. A theoretical exposure to VOCs in groundwater (ingestion and inhalation/dermal contact of water while showering) downgradient of the groundwater extraction trench. The risk assessment determined that an HBTL of 33 μg/l TCE would have a significant risk threshold of 1×10^{-5} for carcinogens and a Hazard Index of less than one for non-carcinogens.

For comparison, the Board considers the following risks to be acceptable at remediation sites: a hazard index of 1.0 or less for non-carcinogens and an excess cancer risk of 10^{-4} or less for carcinogens.

Due to excessive risk that will be present at the site pending full remediation, institutional constraints are appropriate to limit on-site exposure to acceptable levels. Institutional constraints include a deed restriction that notifies future owners of sub-surface contamination and prohibits the use of shallow groundwater beneath the site as a source of drinking water until cleanup standards are met.

13. Basis for Cleanup Standards

a. General: State Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," applies to this discharge and requires attainment of background levels of water quality, or the highest level of water quality that is reasonable if background levels of water quality cannot be restored. Cleanup levels less than background must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of such water, and not result in exceedance of applicable water quality objectives.

State Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304," applies to this discharge. This Order and its requirements are consistent with the provisions of Resolution No. 92-49, as amended.

b. **Beneficial Uses and Associated Water Quality Objectives:** The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on June 21, 1995. This updated and consolidated plan represents the Board's master water quality control planning document. The revised Basin Plan was approved by the State Water Resources Board and the Office of Administrative Law on July 20 and November 13, respectively, of 1995. A summary of regulatory provisions is contained in Title 23 of the California Code of Regulations at Section 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.

Board Resolution No. 89-39, "Sources of Drinking Water" defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high TDS, low yield, or naturally-high contaminant levels. Groundwater underlying and adjacent to the Site qualifies as a potential source of drinking water under this resolution.

The Basin Plan designates the following potential beneficial uses of groundwater underlying and adjacent to the site:

- Municipal and domestic water supply
- Industrial process water supply
- Industrial service water supply
- Agricultural water supply

The existing and potential beneficial uses of the nearby Guadalupe River include:

- Water contact recreation
- Wildlife habitat
- Warm freshwater habitat
- Fish migration and spawning
- Navigation

The following qualify as water quality objectives established by the California Department of Health Services (DOHS) to protect these beneficial uses of groundwater:

Table of MCLs for VOCs of Interest (mg/l)		
Constituent	Objective	Source of Objective
TCE	0.005	California DOHS
1,1-DCE	0.006	California DOHS
trans-1,2-DCE	0.010	California DOHS
cis-1,2-DCE	0.006	California DOHS
Vinyl chloride	0.0005	California DOHS
1,1-DCA	0.005	California DOHS
1,1,1-TCA	0.200	California DOHS

c. **Basis for Groundwater cleanup Standards:** The groundwater cleanup standards for the site are based on applicable water quality objectives and are the more stringent of EPA and California primary maximum contaminant levels (MCLs). Cleanup to this levels will result in acceptable residual risk to humans.

d. **Basis for Soil Cleanup Standards:** The soil cleanup standard for the Site is 10 mg/kg total VOCs. Cleanup to this level will not result in adverse risk to humans working on the Site as proposed in the RA Report dated February 1994. Reference is made to Finding 12.

14. **Future Changes to Cleanup Standards:** The goal of the remedial actions required by this Order are to restore the beneficial uses of groundwater underlying and adjacent to the Site. Results from other sites suggest that full restoration of beneficial uses to groundwater as a result of active remediation at this site may not be possible. If full restoration of beneficial uses is not technologically nor economically achievable within a reasonable period of time, then the discharger may request modification to the cleanup standards or establishment of a containment zone, a limited groundwater pollution zone where water quality objectives are exceeded. Conversely, if new technical information indicates that cleanup standards can be surpassed, the Board may decide if further cleanup actions should be undertaken.

15. **Reuse or Disposal of Extracted Groundwater:** Board Resolution No. 88-160 allows discharges of extracted, treated groundwater from site cleanups to surface waters only if it has been demonstrated that reclamation is not technically or economically feasible.

16. **Basis for 13304 Order:** The discharger has caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance.

17. **Cost Recovery:** Pursuant to California Water Code Section 13304, and consistent with the discharger's current agreement with the Board, the Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order.

18. **CEQA:** This action is an order to enforce the laws and regulations administered by the Board. As such, this action is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15321 of the Resources Agency Guidelines.

19. **Notification:** The Board has notified the discharger and all interested agencies and persons of its intent under California Water Code Section 13304 to prescribe site cleanup requirements for the discharge, and has provided them with an opportunity to submit their written comments.

20. **Public Hearing:** The Board, at a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the discharger (or its agents, successors, or assigns) shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous substances that will degrade water quality or adversely affect beneficial uses of waters of the State is prohibited.

2. Further significant migration of wastes or hazardous substances through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup that will cause significant adverse migration of wastes or hazardous substances are prohibited.

B. CLEANUP PLAN AND CLEANUP STANDARDS

1. **Implement Cleanup Plan**: The discharger shall implement the cleanup plan described in finding 10.

2. **Groundwater Cleanup Standards**: The groundwater cleanup standards for the site are MCLs as follows:

Table of MCLs for VOCs of Interest (mg/l)		
Constituent	Objective	Source of Objective
TCE	0.005	California DOHS
1,1-DCE	0.006	California DOHS
trans-1,2-DCE	0.010	California DOHS
cis-1,2-DCE	0.006	California DOHS
Vinyl chloride	0.0005	California DOHS
1,1-DCA	0.005	California DOHS
1,1,1-TCA	0.200	California DOHS

3. **Soil Cleanup Standards**: A soil cleanup standard of 10 mg/kg of total VOCs shall be met in on-site vadose-zone soils.

C. TASKS

1. PROPOSED INSTITUTIONAL CONSTRAINTS

COMPLIANCE DATE: April 30, 1996

Submit notice to the Executive Officer documenting procedures proposed to be used by the discharger to prevent or minimize human exposure to soil and groundwater contamination prior to meeting cleanup standards. Such procedures shall include a deed restriction prohibiting the use of shallow A-level groundwater as a source of drinking water.

2. IMPLEMENTATION OF INSTITUTIONAL CONSTRAINTS

COMPLIANCE DATE: 60 days after Executive Officer approval of Proposed Institutional Controls

Submit a notice to the Executive Officer documenting that the proposed institutional controls have been implemented.

3. WORKPLAN FOR SOURCE AREA REMEDIATION SYSTEM

COMPLIANCE DATE: August 31, 1996

Submit a workplan acceptable to the Executive Officer for the installation of a source area remediation system. The workplan should describe all significant implementation steps and should include an implementation schedule.

4. IMPLEMENTATION OF SOURCE AREA REMEDIATION SYSTEM

COMPLIANCE DATE: March 31, 1997

Submit a technical report acceptable to the Executive Officer documenting completion of necessary tasks identified in the Task 3 workplan. The report should document system start-up (as opposed to completion) and should present initial results on system effectiveness (i.e., capture zone or area of influence). Proposals for further system expansion or modification may be included in annual reports.

5. FIVE-YEAR STATUS REPORT

COMPLIANCE DATE: February 28, 2001

Submit a technical report acceptable to the Executive Officer evaluating the effectiveness of the approved cleanup plan. The report should include:

a. Summary of effectiveness in controlling contaminant migration and protecting human health and the environment

b. Comparison of contaminant concentration trends with cleanup standards

c. Comparison of anticipated versus actual costs of cleanup activities

d. Performance data (e.g. groundwater volume extracted, chemical mass removed, mass removed per million gallons extracted

e. Summary of additional investigations (including results) and significant modifications to remediation systems

f. Additional remedial actions proposed (if any) to meet cleanup standards (if applicable) including time schedule

If cleanup standards have not been met and are not projected to be met within a reasonable time, the report should assess the technical practicability of meeting cleanup standards and may propose an alternative cleanup strategy.

6. **PROPOSED CURTAILMENT**

COMPLIANCE DATE: 60 days prior to proposed curtailment

Submit a technical report acceptable to the Executive Officer containing a proposal to curtail remediation. Curtailment includes system closure (e.g., well abandonment), system suspension (e.g., cease extraction but wells retained), and significant system modification (e.g., major reduction in extraction rates, closure of individual extraction wells within extraction network). The report should include the rationale for curtailment and a schedule. Proposals for final closure should demonstrate that cleanup standards have been met or contaminant concentrations are stable and contaminant migration potential is minimal.

7. **IMPLEMENTATION OF CURTAILMENT**

COMPLIANCE DATE: As per schedule in Task 6. above

Submit a notice to the Executive Officer documenting curtailment.

8. **EVALUATION OF NEW HEALTH CRITERIA**

COMPLIANCE DATE: 90 days after request by Executive Officer

Submit a technical report acceptable to the Executive Officer evaluating the effect on the approved cleanup plan of revising one or more cleanup standards in response to revision of drinking water standards, maximum contaminant levels, or other health-based criteria.

9. **Delayed Compliance:** If the discharger is delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the discharger shall promptly notify the Executive Officer and the Board may consider revision to this Order.

D. PROVISIONS

1. **No Nuisance:** The storage, handling, treatment, or disposal of polluted soil or groundwater shall not create a nuisance as defined in California Water Code Section 13050(m).

2. **Good O&M**: The discharger shall maintain in good working order and operate as efficiently as possible any facility or control system installed to achieve compliance with the requirements of this Order.

3. **Cost Recovery**: The discharger shall be liable, pursuant to California Water Code Section 13304, to the Board for all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. If the site addressed by this Order is enrolled in a State Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to the procedures established in that program. Any disputes raised by the discharger over reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures for that program.

4. **Access to Site and Records**: In accordance with California Water Code Section 13267(c), the discharger shall permit the Board or its authorized representative:

   a. Entry upon premises in which any pollution source exists, or may potentially exist, or in which any required records are kept, which are relevant to this Order.

   b. Access to copy any records required to be kept under the requirements of this Order.

   c. Inspection of any monitoring or remediation facilities installed in response to this Order.

   d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharge pursuant to this order.

5. **Self-Monitoring Program**: The discharger shall comply with the Self-Monitoring Program as attached to this Order in accordance with the "Sampling and Analysis Plan, United Defense, LP, 328 West Brokaw Road, Santa Clara, Santa Clara County, California," dated June 1995, and as may be amended by the Executive Officer.

   Figure 4 has been included to show the location of all the monitoring wells at the Site including monitoring wells identified in the attached Self-Monitoring Program

(Table 1).

6. **Contractor Qualifications**: All hydrogeologic documents (plans, specifications, and reports) shall be signed by and stamped with the seal of a California registered geologist, a California certified engineering geologist, or a California registered civil engineer.

7. **Lab Qualifications**: All samples shall be analyzed by State-certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control (QA/QC) records for Board review. This provision does not apply to analyses that can only reasonably be performed on-site (e.g. temperature).

8. **Document Distribution**: Copies of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be provided to the following agencies:

   a. Regional Water Quality Control Board (1 copy, staff case handler)

   b. Santa Clara Valley Water District (1 copy, Tom Iwamura)

   Copies of cover letters, title page, table of contents and summaries of above compliance reports - except for the annual reports which shall be submitted in full to the following agencies:

   a. Santa Clara County Health Department (Lee Esquibel)

   b. City of Santa Clara Fire Department (David Parker)

   c. Department of Toxic Substance Control/DTSC (Barbara Cook)

9. **Reporting of Changed Owner or Operator**: The discharger shall file a technical report on any changes in site occupancy or ownership associated with the property described in this Order.

10. **Reporting of Hazardous Substance Release**: If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the

discharger shall report such discharge to the Regional Board by calling (510) 286-1255 during regular office hours (Monday through Friday, 8:00 to 5:00).

A written report shall be filed with the Board within five working days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified.

This reporting is in addition to any reporting to the Office of Emergency Services required pursuant to the Health and Safety Code.

11. **Rescission of Existing Order**: This Order rescinds Order No. 91-164.

12. **Periodic SCR Review**: The Board will review this Order periodically and may request revision when necessary.

I, Loretta K. Barsamian, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on February 21, 1996.

Loretta K. Barsamian
Executive Officer

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FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS ORDER MAY SUBJECT YOU TO ENFORCEMENT ACTION, INCLUDING BUT NOT LIMITED TO: IMPOSITION OF ADMINISTRATIVE CIVIL LIABILITY UNDER WATER CODE SECTIONS 13267 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR INJUNCTIVE RELIEF OR CIVIL OR CRIMINAL LIABILITY

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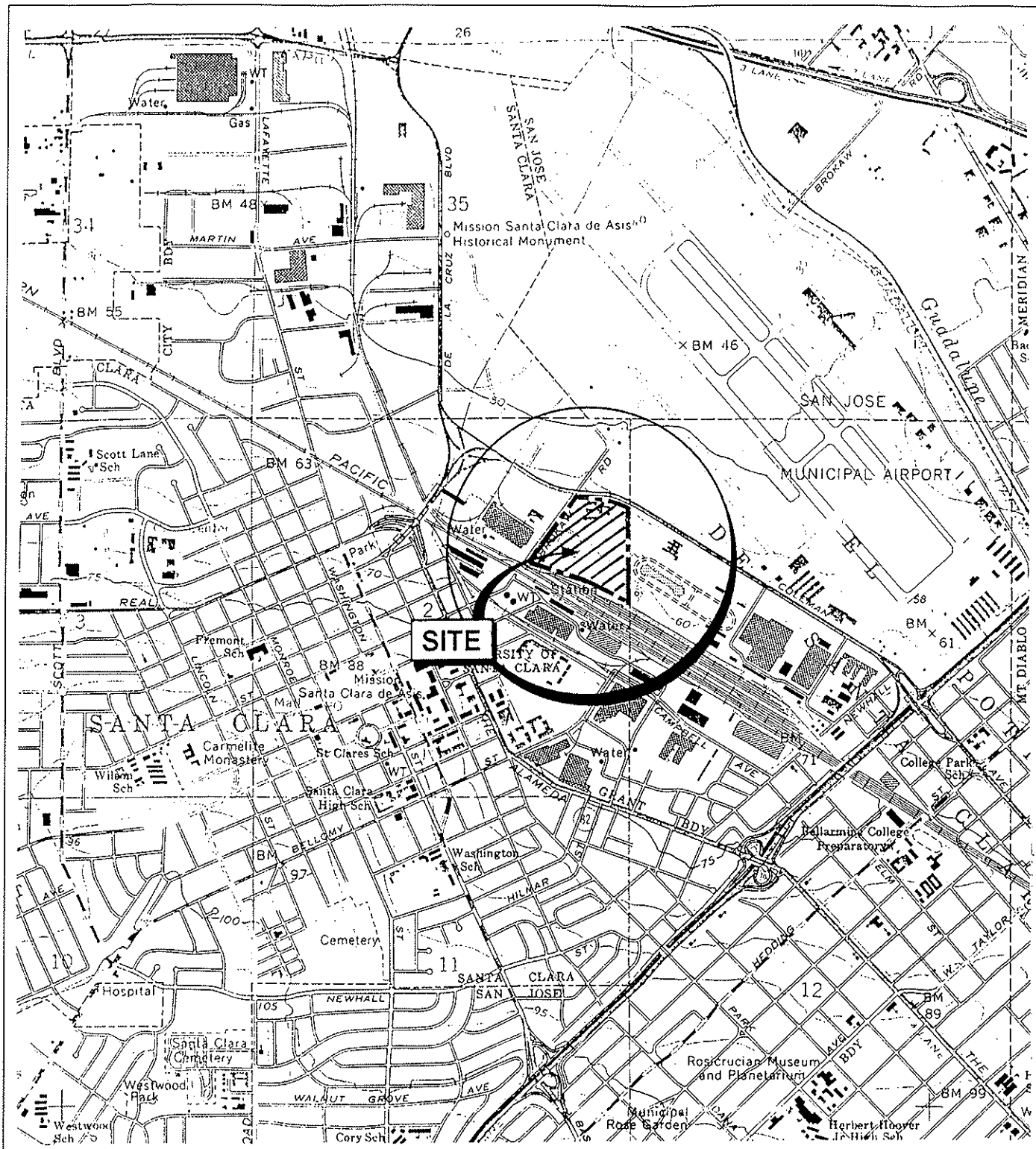
Attachments: Figure 1 Site Location
Figure 2 Site Plan
Figure 3 Treatment System Location Map
Figure 4 Monitoring Wells Location Map
Self-Monitoring Program



SOURCE: USGS 7.5', San Jose West Quadrangle, 1980.

United Defense FMC/BMY	United Defense LP Ground Systems Division 1125 Coleman Avenue San Jose, CA 95110	SITE LOCATION 328 WEST BROKAW ROAD	
		DECEMBER 1995	FIGURE 1

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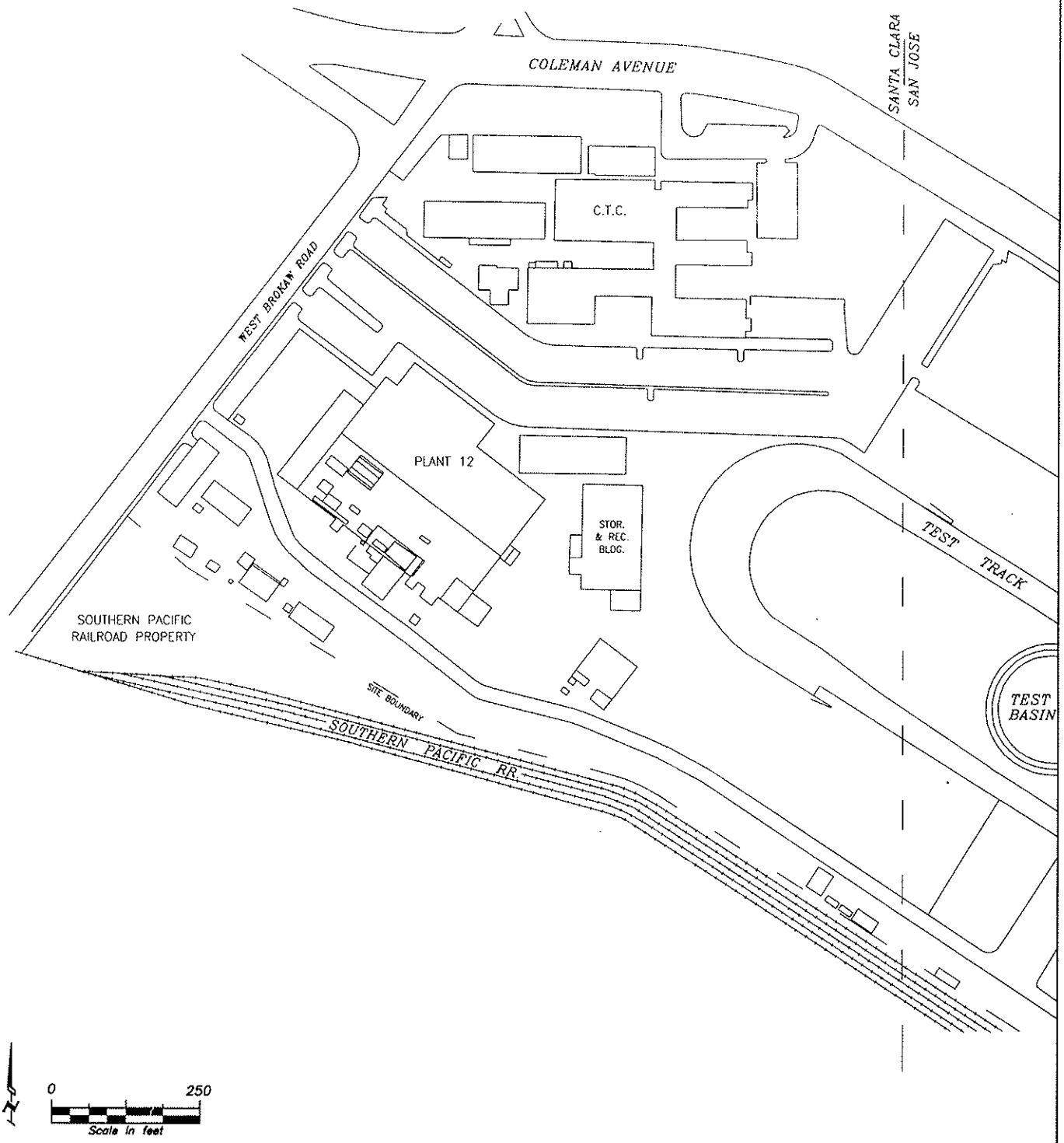

United Defense **FMC/BMY**	United Defense LP Ground Systems Division 1125 Coleman Avenue San Jose, CA 95110	SITE MAP 328 WEST BROKAW ROAD	
		DECEMBER 1995	FIGURE 2

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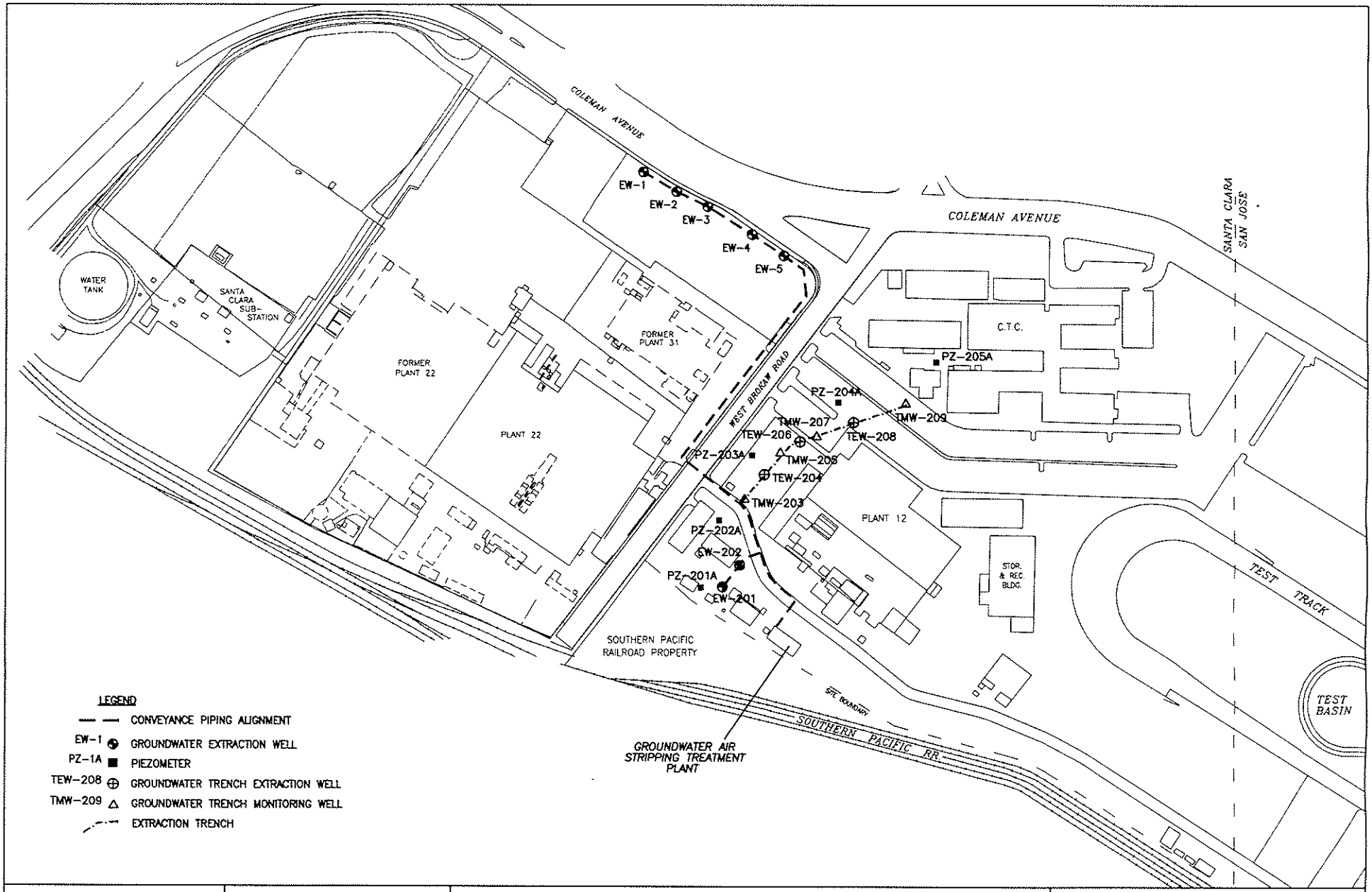

United Defense **FMC/BMY**	United Defense LP Ground Systems Division 1125 Coleman Avenue San Jose, CA 95110	328 and 333 WEST BROKAW ROAD	EXTRACTION, CONVEYANCE AND TREATMENT SYSTEM LOCATION DECEMBER 1995 | FIGURE 3

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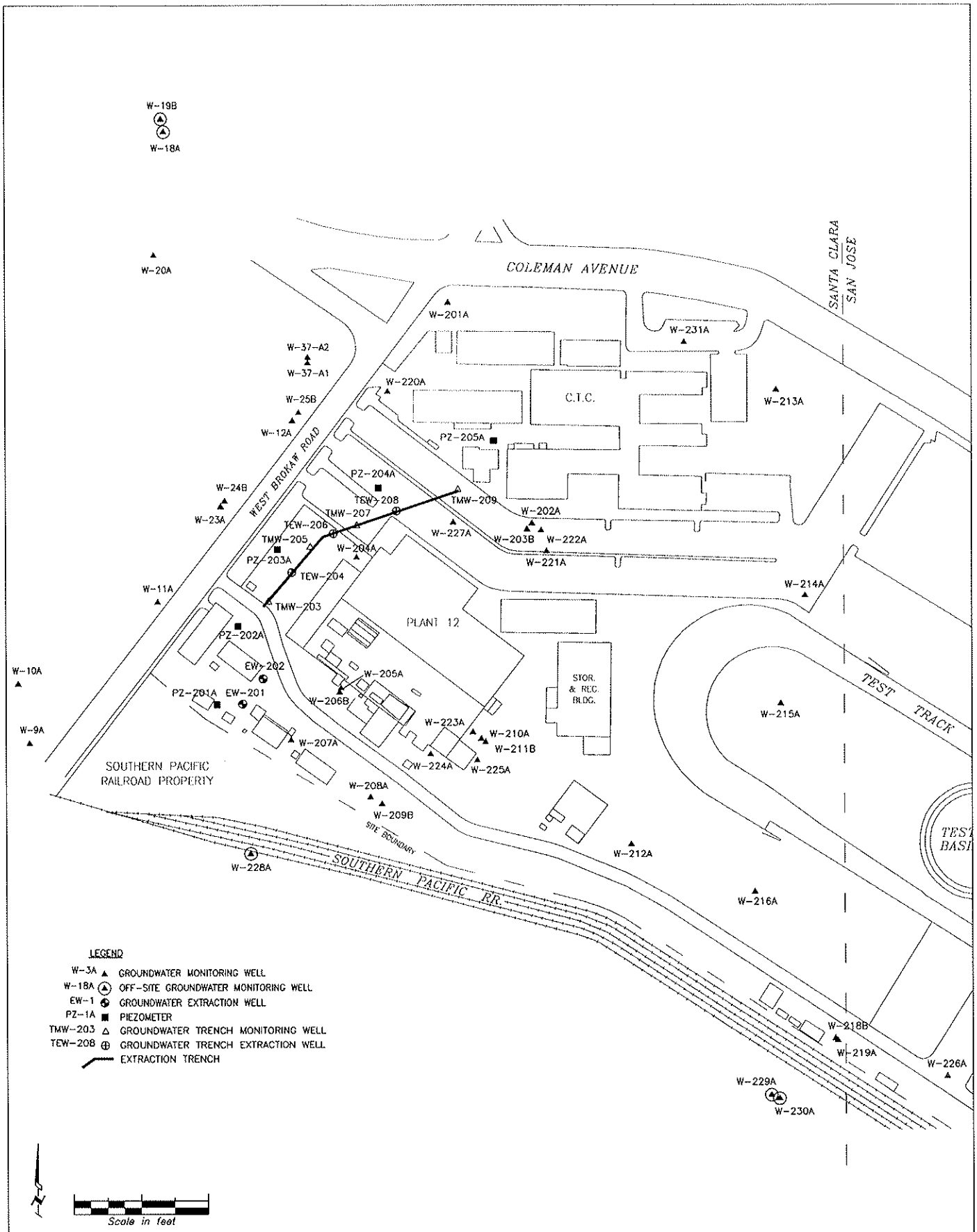

United Defense FMC / BMY	United Defense LP Ground Systems Division 1125 Coleman Avenue San Jose, CA 95110	MONITORING WELL LOCATIONS	
		DECEMBER 1995	FIGURE 4

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM FOR:

FMC CORPORATION AND UNITED DEFENSE LP, GROUND SYSTEMS DIVISION for the property located at

328 WEST BROKAW ROAD
SANTA CLARA
SANTA CLARA COUNTY
CALIFORNIA

1. **Authority and Purpose**: The Board requests the technical reports required in this Self-Monitoring Program pursuant to Water Code Sections 13267 and 13304. This Self-Monitoring Program is intended to document compliance with Board Order No. 96-024 (site cleanup requirements).

2. **Monitoring**: The discharger shall measure groundwater elevations quarterly in all monitoring wells, and shall collect and analyze representative samples of groundwater in accordance with the "Sampling and Analysis Plan, United Defense, LP, 328 West Brokaw Road, Santa Clara, Santa Clara County, California," dated June 1995, and Table 1.

   The discharger shall sample any new monitoring or extraction wells and analyze groundwater samples for the same constituents as shown in the above table. The discharger may propose changes in the above table; any proposed changes are subject to Executive Officer approval.

3. **Quarterly Monitoring Reports**: The discharger shall submit quarterly monitoring reports to the Board no later than 30 days following the end of the calendar quarter. The first quarterly monitoring report shall be due on April 30, 1996. The reports shall include:

   a. Transmittal Letter: The transmittal letter shall discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter shall be signed by the discharger's principal executive officer or his/her duly authorized representative, and shall include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.

b. Groundwater Elevations: Groundwater elevation data shall be presented in tabular form, and a groundwater elevation map should be prepared for each monitored water-bearing zone. Historical groundwater elevations shall be included in the fourth quarterly report each year.

c. Groundwater Analyses: Groundwater sampling data shall be presented in tabular form, and an isoconcentration map should be prepared for one or more key contaminants for each monitored water-bearing zone, as appropriate. The report shall indicate the analytical method used, detection limits obtained for each reported constituent, and a summary of QA/QC data. Historical groundwater sampling results shall be included in the fourth quarterly report (annual) each year. The report shall describe any significant increases in contaminant concentrations since the last report, and any measures proposed to address the increases. Supporting data, such as lab data sheets, need not be included.

d. Groundwater Extraction: If applicable, the report shall include groundwater extraction results in tabular form, for each extraction well and for the site as a whole, expressed in gallons per minute and total groundwater volume for the quarter. The report shall also include contaminant removal results, from groundwater extraction wells and from other remediation systems (e.g., soil vapor extraction), expressed in units of chemical mass per day and mass for the quarter. Historical mass removal results shall be included in the fourth quarterly report each year.

e. Status Report: The quarterly report shall describe relevant work completed during the reporting period (e.g., site investigation, interim remedial measures) and work planned for the following quarter.

4. **Violation Reports**: If the discharger violates requirements in the Site Cleanup Requirements, then the discharger shall notify the Board office by telephone as soon as practicable once the discharger has knowledge of the violation. Board staff may, depending on violation severity, require the discharger to submit a separate technical report on the violation within five working days of telephone notification.

5. **Other Reports**: The discharger shall notify the Board in writing prior to any site activities, such as construction or underground tank removal, which have the potential to cause further migration of contaminants or which would provide new opportunities for site investigation.

6. **Record Keeping**: The discharger or his/her agent shall retain data generated for the above reports, including lab results and QA/QC data, for a minimum of six years after origination and shall make them available to the Board upon request.

7. **SMP Revisions**: Revisions to the Self-Monitoring Program may be ordered by the Executive Officer, either on his/her own initiative or at the request of the discharger.

Prior to making SMP revisions, the Executive Officer will consider the burden, including costs, of associated self-monitoring reports relative to the benefits to be obtained from these reports.

I, Loretta K. Barsamian, Executive officer, hereby certify that this Self-Monitoring Program was adopted by the Board on February 21, 1996.

Loretta K. Barsamian
Executive Officer

Attachment: Table 1, Self-Monitoring Plan

TABLE 1
GROUNDWATER SELF-MONITORING PLAN
FMC CORPORATION AND UNITED DEFENSE LP, GROUND SYSTEMS DIVISION
328 WEST BROKAW ROAD
SANTA CLARA
SANTA CLARA COUNTY
CALIFORNIA

Well #	Sampling Frequency	Analyses
W-201A	A	8010,8015M
W-202A	A	8010, Metals
W-203B	A	8010
W-204A	Q	8010, 8015M
W-205A	Q	8010, 8015M
W-206B	A	8010
W-207A	Q	8010
W-207A	A	8010,8015M
W-210A	Q	8010, 8015M
W-212A	Q	8010
W-213A	A	8010
W-214A	A	8010, Metals
W-216A	Q	8010, 8015M
W-218B	Q	8010
W-219A	Q	8010, 8015M
W-220A	Q	8010
W-221A	Q	8010
W-221A	A	8010, Metals
W-225A	A	8010, 8015M, Metals
W-226A	A	8010
W-227A	A	8010, Metals
W-228A	Q	8010
W-228A	A	8010, Metals
W-229A	A	8010, 8015M
W-230A	A	8010, Metals
W-231A	Q	8010, 8015M
W-231A	A	8010, 8015M, Metals
PZ-205A	A	8010

A = Annually means these wells will be sampled during the fourth quarter only.

Q = Quarterly means these wells will be sampled every quarter including the fourth quarter.

8010 Analysis will be performed for plume definition and migrations issues.

8015M Analysis will be performed based on previous diesel or motor oil detections.

Priority Pollutant Metals Analysis will be performed based on previous detections above MCLs.